

## **ABSTRACT**

Nature evolves biological molecules such as proteins through iterated rounds of diversification, selection, and amplification. The power of Nature and the flexibility of organic synthesis are combined in nucleic acid-templated synthesis. The present invention provides a variety of template architectures for performing nucleic acid-templated synthesis, methods for increasing the selectivity of nucleic acid-templated reactions, methods for performing stereoselective nucleic acid-templated reactions, methods of selecting for reaction products resulting from nucleic acid-templated synthesis, and methods of identifying new chemical reactions based on nucleic acid-templated synthesis.

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